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ABSTRACTS

RESEARCH PODIUM PRESENTATIONS – SESSION I

CARDIOVASCULAR DISEASE RESEARCH STUDIES

CV1

LIFETIME HEALTH CARE COSTS OF OBESITY-RELATED COMORBIDITIES IN THE UNITED STATES, 2007-2010

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OBJECTIVES: This study analyzed lifetime healthcare costs of obesity-related comorbidities, including diabetes, hypertension, coronary heart disease (CHD), and stroke. **METHODS:** We used data from the National Health Interview Survey (NHIS), 2007-2010, and linked it to the Medical Expenditure Panel Survey to estimate annual healthcare expenditures. We excluded pregnant women, cancer survivors, and underweight individuals. Disease risks were estimated using the National Health and Nutrition Examination Survey data. Mortality risks were estimated using the NHIS Linked Mortality Public-Use Files and predicted for the 2007-2010 population. Analyses were stratified by gender and controlled for age, race, body mass index (BMI) category, comorbidities, smoking, and insurance. Complex sampling designs were adjusted for. A Markov model, populated by disease and mortality estimates and healthcare expenditures, was built to simulate lifetime healthcare expenditures for gender-race-age-BMI group subpopulations. **RESULTS:** We included 18,763 women and 14,793 men. We use insured, non-smoking individuals age 40 as an example. Without obesity-related comorbidities, remaining lifetime healthcare costs ranged from $90,125 (normal-weight, non-white, non-black men) to $149,761 (obese white women). With diabetes, costs ranged from $124,757 (overweight, non-white, non-black men) to $207,643 (obese white women); with hypertension, costs ranged from $118,084 (overweight, non-white, non-black men) to $197,343 (obese white women); with CHD, costs ranged from $141,753 (normal-weight, non-white, non-black men) to $225,575 (obese black men); with stroke, costs ranged from $107,803 (normal-weight, non-white, non-black men) to $184,283 (obese white women). With two comorbidities, obese black men with hypertension and CHD had the highest costs ($274,104). With three comorbidities, obese white women with diabetes, hypertension, and CHD incurred the highest costs ($357,486). With all four comorbidities, obese white women had the highest costs ($432,102). **CONCLUSIONS:** This study suggests that obesity-related comorbidities impose a significant economic burden. Some subpopulations, e.g., obese white women and obese black men, incur higher healthcare costs than others.

CV2

THE ASSOCIATION BETWEEN ADHERENCE TO CARDIOVASCULAR MEDICATIONS AND HEALTH CARE UTILIZATION

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OBJECTIVES: Poor adherence to medications for cardiovascular disease (CVD) is associated with adverse health outcomes, but little is known on its impact on healthcare utilization (HCU). We examined whether adherence is related to a long-term decrease in HCU. **METHODS:** A retrospective cohort study of 2220 patients with CVD enrolled in Maccabi Healthcare Services in Israel initiating CVD medication therapy between 2006 and 2008. Adherence was assessed by the proportion of days covered (PDC) with medications. Patients were defined as: non-adherent (PDC<0.4), partially adherent (0.4≤PDC<0.8), and adherent (PDC≥0.8). HCU was estimated following treatment initiation and up to four years. Multivariable GEE models were used to analyze predictors of HCU. Model I included total adherence during the entire follow-up period as well as the interaction between this measure and the follow-up year. Model II included previous and current year's adherence as well as previous year's HCU cost. Both models were adjusted to potential confounders including: age, gender, socioeconomic status, ownership of voluntary supplementary health insurance, and comorbidities. **RESULTS:** The median age of patients was 63 (67% males). Fifty one percent of patients (n=1139) were defined as adherent, 24% as partially adherent and 25% as non-adherent. Model I: The annual HCU costs of adherent patients decreased in 9% following treatment initiation (RR=0.91, 95% confidence interval (CI): 0.88-0.95, P<0.001). This decrease stem predominantly from reduction in hospitalization and medication costs. No significant changes in annual costs following treatment initiation were observed among partially adherent (RR=0.97, 95% CI: 0.88-1.07, P=0.526) and non-adherent (RR=0.99, 95% CI: 0.90-1.09, P=0.785) patients. Model II: No temporal association was found between adherence and HCU. **CONCLUSIONS:** Adherence to CVD medications is suboptimal. Adherence is associated with long-term decrease in healthcare expenditure. Exploring reasons for the high non-adherence and ways to improve adherence may optimize utilization of health systems' scarce resources.

CV3

PREVALENCE AND DIRECT MEDICAL COSTS ASSOCIATED WITH ANGINA AND CHEST PAIN FOLLOWING PERCUTANEOUS CORONARY INTERVENTION IN THE UNITED STATES

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OBJECTIVES: Percutaneous coronary intervention (PCI) is effective in reducing angina and improving quality of life. However, as reported in clinical trials, angina and chest pain remain a clinical challenge post-PCI. Currently there is limited contemporary data on the real world rate and its economic burden. We sought to describe the incidence and direct costs associated with angina or chest pain following a PCI. **METHODS:** Patients undergoing PCI (index event) were identified in the Truven Health MarketScan Commercial and Medicare Supplemental Databases from 2008-2011. Patients were required to have 12 months of continuous enrollment pre- and post-index. Post-index angina and chest pain were defined as an inpatient claim with a principal diagnosis of angina or chest pain, an outpatient claim with an angina or chest pain diagnosis with an accompanying stress test, repeat PCI or cardiac catheterization, more than one month post-index. Total and cardiovascular-specific costs were described 1-3 years post-index in 2013 US$. Patients with post-index acute coronary syndrome (ACS) were excluded from the cost analysis. **RESULTS:** 51,756 patients met the selection criteria (mean age: 61.8 years, 72% male). The incidence of post-PCI angina or chest pain was 27.8% by one year increasing to 40.1% by three years post-PCI. Average total costs for angina/chest pain patients were 1.8 times higher (+$14,514) than those without angina, chest pain or ACS (p<0.001) with differences persisting at three years (p<0.001). Post-PCI cardiovascular-related costs were likewise higher for angina/chest pain patients one year ($18,548 (SD=$30,525) versus $7,896 (SD=$17,638), p<0.001) and three years post-index ($33,238 (SD=$43,261) versus $19,773 (SD=$34,097), p<0.001). **CONCLUSIONS:** Post- PCI angina and chest pain are common and carry substantial direct medical burden. Strategies to reduce these events could impact the costs and improve outcomes of ischemic heart disease.

CV4

OUTCOMES AND HEALTH RESOURCE UTILIZATION AMONG PATIENTS WITH HEART FAILURE WITH REDUCED EJECTION FRACTION (HFREF) AT AN ACADEMIC MEDICAL CENTER (AMC) IN THE UNITED STATES

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OBJECTIVES: To assess clinical characteristics, hospitalizations, and hospitalization charges among a contemporary, real world cohort of HFrEF patients. **METHODS:** A retrospective cohort study of HFrEF, identified by ICD-9 code 428.x with a left ventricular ejection fraction (LVEF) ≤ 40% between 01/01/08 to 12/31/13 (study period) were identified using an AMC enterprise data warehouse (EDW) that includes electronic health records and billing/administrative claims. Demographic, clinical, and hospitalization/charge data were extracted. The index date was defined as the first mention of an ICD-9 of 428.x within the study period. A subset of prevalent HFrEF underwent chart review to obtain detailed medication and medical histories. **RESULTS:** The cohort comprised 1931 HFrEF with a mean age of 63±15 years, prevalently Caucasian (70%) males (70%). The average LVEF was 28±9%. Medication data and etiology was assessed in prevalent HFrEF (n=989). The prevalent HFrEF cohort was predominantly ischemic etiology (67%) and ACEi/ARB/aldosterone antagonists were prescribed in 53%/16%/29%, respectively. Eighty percent were on β-adrenergic blockers. Atrial fibrillation and renal insufficiency were present in 45% and 42%, respectively. Devices were present in 34% (Implantable Cardioverter-Defibrillator) and 16% (Cardiac Resynchronization Therapy) of patients. In the full sample, during a mean follow up period of 34±26 months, all-cause mortality was 18% (13% CV death) at one-year and 23% (16% CV death) at two-years. There were 2106 all-cause hospitalizations of which 972 (46%) were for heart failure (HF). The median length of stay for HF hospitalizations was 4.3 days and the median charge was $27,230. Among the HF hospitalizations 30-day readmission rates were 167 (21%) for all-cause, and 111 (13%) for HF. **CONCLUSIONS:** In an AMC-based EDW, HFrEF was well treated, resulting in a 1-year mortality and 30-day re-admission rates similar to published data. The median charge for a HF hospital stay was $27,230.